Provider Staffing and Patient Population at Blanchfield Army Community Hospital

A Graduate Management Project

Submitted to the Faculty of the U.S. Army-Baylor University

Graduate Program in Healthcare Administration

By

CPT Robert C. Hoerauf, CHE

Blanchfield Army Community Hospital

Fort Campbell, Kentucky

14 April 2000

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	April 2000	FINAL REPORT (07-99 TO 07-00)

4. TITLE AND SUBTITLE
PROVIDER STAFFING AND PATIENT POPULATION AT BLANCHFIELD ARMY COMMUNITY HOSPITAL

5. FUNDING NUMBERS
2 Disk

6. AUTHOR(S)
CPT ROBERT C. HOERAUF, MSC, CHE

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
BLANCHFIELD ARMY COMMUNITY HOSPITAL
650 JOEL DRIVE
FORT CAMPBELL, KENTUCKY 42223-5349

8. PERFORMING ORGANIZATION REPORT NUMBER
12-00

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
US ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
BLDG 2841 MCCS-HRA US ARMY-BAYLOR PROGRAM IN HCA
3151 SCOTT ROAD SUITE 1412
FORT SAM HOUSTON TEXAS 78234-6135

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

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This is first accomplished by identifying the current beneficiary population and provider staffing levels within the hospital. The current provider staffing level is then compared to selected civilian HMOs for all specialties of medical care. In addition, the provider staff is compared to the Department of Defense workload-based Automated Staffing Assessment Model (ASAM). These comparisons are made in order to give the hospital leadership an idea of where to best align its physician and mid-level resources.

Finally, recommendations are made for further analysis and research in the areas of Women's Health, Behavioral Science, and Medical Specialties. The practicality of the research effort is to fine-tune the hospital staff that will subsequently lead to low-cost, high-quality, and easily accessible healthcare for all enrolled beneficiaries within the Fort Campbell community.

14. SUBJECT TERMS
PROVIDER STAFFING, PROVIDER PROFILING, PATIENT POPULATION, AUTOMATED STAFFING ASSESSMENT MODEL, HMO STAFFING BENCHMARKS

15. NUMBER OF PAGES
66

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
N/A	N/A	N/A	UL

ACKNOWLEDGMENTS

Completing a task as arduous and complex as a graduate management project is virtually impossible without the love and support of family, friends, and fellow healthcare professionals. First, and foremost, I want to thank God for thinking about me and giving me another day to live. Your love is limitless and will endure forever.

Next, I want to thank my wife and very best friend and confidante, Lisa. I could not have completed this graduate program or this project without your unwavering love, patience, and support. I dedicate this project and my life to you. I also express my love and gratitude to my sons, Andrew and Nicholas. You boys continue to give me a renewed sense of purpose in my life. The two of you are truly my most precious possessions.

My very existence could not have been possible without the love and commitment my parents had for each other and for their children. I thank both of you from the bottom of my heart for bringing me up within the community of God and within a home environment full of love, respect, dignity, and self-worth. I literally owe you my life; both of you will always be my real-life heroes.

I also pay tribute to the many fathers, sisters, and teachers who spent so many years preparing me for this moment. Specifically, the instructors at St. Jude Elementary School in Detroit, Mi. and Notre Dame High School in Harper Woods, Mi. were second to none in instilling the importance of God and

continued education in our lives.

Moreover, I wish to thank the wonderful staff at Blanchfield Army Community Hospital for their patience, understanding, professionalism, and continued support of this project during my residency year. Specifically, I express my appreciation to the Commander, COL Deal, and all the deputy commanders, COL McNabb, LTC(P) Richards, and LTC Gallagher. To LTC Gallagher, you have been a truly outstanding mentor and teacher not because of your words but of your actions. You have taught me to prioritize my family, my career, and the patients of Blanchfield. Thank-you for your continued patience and support of both this graduate project and my year-long residency.

Finally, I want to recognize all patients that seek high-quality and compassionate healthcare. The patients are the very reason for career existence. Everything we do in healthcare must add value and lead to superior health outcomes for both the patient and their family members. They should always be our ultimate customers, we exist to serve their needs. May this project lead to improved patient care for the entire Fort Campbell community.

March 27, 2000
1:25 p.m.
Chicago, Illinois

Abstract

Both an adequate level and appropriate skill mix of physician and mid-level providers is necessary for a healthcare facility to provide quality care to its enrolled population. The purpose of this project is to identify and develop the optimal provider and specialty skill mix for Blanchfield Army Community Hospital in support of its enrolled beneficiaries.

This is first accomplished by identifying the current beneficiary population and provider staffing levels within the hospital. The current provider staffing level is then compared to selected civilian HMOs for all specialties of medical care. In addition, the provider staff is compared to the Department of Defense workload-based Automated Staffing Assessment Model (ASAM). These comparisons are made in order to give the hospital leadership an idea of where to best align its physician and mid-level resources.

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Chapter 1 - Introduction

The Colonel Florence A. Blanchfield Army Community Hospital is a modern, four-level facility located on Fort Campbell, Kentucky. The hospital provides a spectrum of outpatient and inpatient services and procedures for over 82,000 eligible beneficiaries within the Ft. Campbell catchment area. In December 1998, The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) granted the hospital a full three-year reaccredidation. As a licensed 241-bed facility, Blanchfield Army Community Hospital (BACH) employs a combined military and civilian staff of over 1,200. In addition, BACH provides over 2,000 outpatient visits and fills over 2,100 prescriptions every business day. Blanchfield currently supports its enrolled beneficiary population with an FY00 operating budget of over $90 million.

Blanchfield's mission is to maintain a medically fit force, deploy mission ready soldiers, provide comprehensive health services for the Fort Campbell military community, and transition to a wartime operational mode upon command. The hospital's vision is to become the premier military community hospital within the U.S. Army Medical Command (MEDCOM) supporting Fort Campbell and its contingency forces.

The primary eligible beneficiary population consists of soldiers and their family members assigned to the 101st Airborne Division (Air Assault), the 5th Special Forces Group (Airborne), the 160th Special Operations Aviation Regiment (Airborne) and other tenant and support organizations. This population is

unique in that the soldiers assigned to the above airborne units are considered to be the very best amongst all of the armed forces. As such, they routinely face dangerous, worldwide deployments and missions and must be ready on a moment's notice. BACH stands ready to serve the mission-unique needs of assigned soldiers as well as their family members left behind due to deployment.

Other categories of eligible beneficiaries include retirees, retiree family members and survivors. Together, these five categories constitute the total eligible population of almost 83,000 (Appendix C) (Source: 2nd Quarter, Fiscal Year 1999 Defense Enrollment Eligibility Reporting System Database).

Active duty service members are automatically signed up for the military's version of a health maintenance organization, Tricare Prime. Active duty family members are free to sign up for "Prime" or they can opt to do nothing and receive care under the "Extra" or "Standard" option. Generally, the Extra and Standard options provide a greater choice in local providers with increased deductibles and higher out-of-pocket costs. Military retirees can also choose to enroll in Tricare Prime. However, they must pay a yearly fee of $230/person or $460/family.

Blanchfield receives mission requirements and guidance from several higher headquarters and command authorities. These higher commands include the U.S. Army Medical Command, Southeast Regional Medical Command, and the Department of Defense Health Service Region 5 Lead Agent Office. In addition, Anthem

Alliance Health Insurance Company currently holds the Region 5 Tricare contract. This contract is currently up for re-bid and should be awarded by the spring of 2000. Anthem Alliance is also one of the bidders for the new contract.

Finally, as an installation tenant, Blanchfield serves as a direct asset to the 101st Airborne Division and Installation Commander. All of these commands and organizations directly influence the decisions and overall direction of this community hospital. Other forces on the hospital include: combat readiness; Professional Filler System (PROFIS) requirements; accessibility standards; cost containment; revised financing; and facilities maintenance and modernization.

Conditions which prompted the study

To keep pace with the current dynamic healthcare environment, Blanchfield adopted several management philosophies commonly found in the civilian healthcare community. Blanchfield implemented one such philosophy, product line management (PLM), in October 1997.

Within product line management, the hospital is organized around four major areas: Primary Care, Perioperative, Women's Health, and Behavioral Science. Of particular interest is the Primary Care Division that includes the Red, White, and Blue Family Practice Clinics. The sponsor's unit determines their family member's clinic of assignment. Hospital personnel and their family members are assigned to a clinic based on the last digit of the sponsor's social security number.

Retiree family members, ages 13 and younger, are also assigned according to the last digit of their sponsor's social security number.

In addition, the Gold Internal Medicine clinic provides services to retirees and their families enrolled in Tricare Prime. Since this clinic services retirees, the emphasis is on internal medicine, cardiology, diabetes, hematology, hypertension and chemotherapy.

The previous senior leadership instituted PLM in order to increase and enhance communication, empower both employees and managers, create a sense of ownership, improve patient care and create incentives for new and improved ideas and techniques at the clinic level. The leaders and managers within all product lines have virtually complete control over their personnel, clinical space, budget and patient flow. Although providers and administrators still debate whether PLM has been a success at Blanchfield, it is now an integral part of how the facility provides primary care to its enrolled beneficiaries. Now that the PLM concept is over two years old at Blanchfield, the senior leadership must thoroughly review the provider staff and determine whether or not it is meeting the needs of its beneficiary population.

The Planning Process

In order to remain fiscally viable under the Tricare rules, Blanchfield must properly redefine its strategic response to these changes in the environment. As the Griffith text explains, proper planning refers to the process of making

resource allocation decisions about the future, especially the process of involving organizational members (Griffith, 1995). Planning further includes the future analysis of community needs, responses to external threats and opportunities, the development of new programs, and the assembly and recruitment of requisite resources.

An integral component of this planning process is the need for an environmental assessment. Environmental assessment is really just a review of the organization and its environment. For instance, Blanchfield must review the demographic, economic and epidemiological characteristics of its nearly 83,000 eligible beneficiary population. A review of the number of obstetric deliveries per month within the Fort Campbell community may indicate Blanchfield should expand its Women's Health Services. At the beginning of PLM, Blanchfield averaged 150 deliveries per month. For the months of August, September and October 1999, this average jumped to around 160 deliveries per month, a 6.7% increase in newborns. One option may be to create or expand family planning services that educates young families on the use of birth control.

Another component includes the analysis of future healthcare demands from different beneficiary populations. For example, how should this hospital be configured if the retiree population and their dependents are squeezed out of military treatment facilities altogether? Moreover, how will the hospital react to retirees that opt not to enroll in Tricare Prime yet continue to access care through a space-available

basis? Whichever scenario comes to fruition will directly impact on the optimal provider mix within the organization.

Statement of the Problem

The main objective of the research project is to determine the optimal primary provider and specialty skill mix given the current BACH patient population. The staffing mix must be developed to service the healthcare needs of BACH's enrolled population. Answering the following questions will support the main research effort:

- Does BACH currently have an adequate number of staff providers to serve population needs and provide for quality clinical outcomes?
- If the current number of providers proves to be adequate, how should they be configured to create the optimal staff mix? Is the physician/non-physician provider mix adequate when compared to patient populations of similar demographics and size?
- Which specialties need to be increased/reduced? Can some be eliminated altogether? Should BACH create or develop services that are currently not being provided?
- Can a model be developed here at Blanchfield that will be flexible enough to react to changes in population demographics? A model must be developed that not only serves today's healthcare needs, but those of tomorrow.

Literature Review

Primary Care

Under the current BACH configuration, primary care is the focal point for the overwhelming majority of healthcare delivery. According to the Kongstvedt text, primary care is considered to be care rendered by physicians practicing in the specialties of family practice, internal medicine and pediatrics (Kongstvedt, 1997). However, primary care also involves the use of non-physician providers such as physician assistants, family nurse practitioners and nursing clinical specialists.

Primary care includes health promotion, disease prevention, counseling, patient education, and the diagnosis and treatment of acute and chronic illnesses (American Academy of Family Physicians [AAFP], 1999). In addition, primary care provides patient advocacy to accomplish cost-effective care through the coordination of healthcare services. Most importantly, primary care encourages strong patient-provider communication and defines the role of the patient as a partner in health care. An effective primary care management system improves customer-oriented care, increases customer satisfaction, and provides the efficiencies of a gatekeeper system.

Primary Care Physician

A primary care physician is a generalist physician who provides definitive care to the patient at the point of first contact and takes continuing responsibility for providing that patient's care (AAFP, 1999). Primary care physicians devote most of their time and effort to providing primary care services

to a defined (enrolled) population of patients. Central to the concept of primary care is the fact that primary care physicians serve as the initial entry point for virtually all of a patient's healthcare needs. This is the reason why primary care providers are often referred to as "gatekeepers". They control the flow and use of virtually all future patient care services. Primary care physicians also serve as patient advocates in coordinating the use of the entire healthcare system.

The American Academy of Family Physicians stresses the primary care or family physician's primary role in the delivery and management of healthcare. They state emphasis should remain on the continuing and comprehensive care and keeping the focus on the patient and quality of care regardless of the configuration of the healthcare delivery system (AAFP, 1999).

Non-Physician Providers (NPPs)

Primary care or family physicians employ several types of non-physician providers to extend the scope of their practice. Physician assistants, nurse practitioners, and certified nurse midwives have been used to improve access and maintain quality, especially within underserved communities. Federal and state laws require NPPs (of all types) to function and remain under the direction and responsible supervision of a practicing, licensed physician. The central principle underlying physician supervision of NPPs is that the physician retains ultimate responsibility of the rendered patient care. This means that NPPs perform only those acts and procedures that have been

specifically authorized by the supervising physician. The supervising physician bears both the authority and responsibility for all NPP actions.

Physician's directives to NPPs often take the form of written protocols, which include guidelines that describe and delineate NPP functions, parameters, and delegated responsibilities. Most states require these protocols to be submitted and approved by the state medical board (AAFP, 1999).

Many states also allow remote physician supervision of the NPPs. However, this practice is more common in rural, underserved areas where there is a shortage of qualified physicians. If NPPs are used in a remote site, then the supervising physician must ensure distance does not create an impediment to quality care. The supervising physician must be available in person or by electronic means at all times when an NPP is caring for patients. Transportation procedures must be clearly established for patients needing immediate emergency care. Again, it is still the physician's ultimate responsibility for all patient care rendered by the NPP.

Physician Assistants

Physician assistants (PAs) are health care professionals licensed to practice medicine with physician supervision (American Academy of Physician Assistants [AAPA], 1999). As part of their day-to-day duties, PAs conduct physical exams, diagnose and treat illnesses, order tests and, in most states, write prescriptions. PAs are trained in intensive medical

programs accredited by the Commission on Accreditation of Allied Health Education Programs.

Due to the close working relationship between physicians and PAs, physician assistants are trained and educated in the same medical model as physicians. Upon graduation, PAs take a national certification exam developed by the National Commission on Certification of Physician Assistants in conjunction with the National Board of Medical Examination. The requirements for state licensure are graduation from an accredited physician assistant program and the passage of the certifying exam (AAPA, 1999).

Generally, PAs will see many of the same types of patients as physicians. The PA turns over all cases considered too complex to the physician for further evaluation and treatment. An important part of PA training is to understand their clinical limitations and refer to the supervising physician as appropriate.

Nurse Practitioners

Nurse practitioners (NPs) are licensed registered nurses that undergo specific training programs. Even with this additional training, NPs still serve in a collaborative arrangement under the direct supervision of a licensed physician. In no instance should a NP be delegated duties for which the supervising physician does not have the appropriate training and competence (Journal of Nursing Scholarship, 1999).

Several studies indicate that although the number of physicians will increase, the rate will increase only half that

of licensed nurse practitioners. Funding from the United States Department of Health and Human Services through Title VIII of the Public Health Service Act has supported this growth in NP programs. Title VIII funding for NP programs was $16 million in 1996, up from only $3 million in 1976 (Harper & Johnson, 1998).

Ongoing consumer studies continue to reflect satisfaction, acceptance, and equal outcomes when care is provided by NPs (American Nurse Association, 1993). Successful physician-nurse collaboration has allowed patients to receive care from nurses as well as from physicians while maintaining superior outcomes.

Population-Based Provider Staffing Models

One research study published in 1997 examined physician staffing for two large and mature health maintenance organizations (Hart & Wagner, 1997). Specifically, the study took a look at Group Health Cooperative of Puget Sound and Group Health Foundation in Minneapolis. Both of these HMOs had existed for more than twenty years and were the largest, not-for-profit managed care plans in their respective areas. The purpose of this study was to determine the physician staffing ratios of the two organizations and to compare these ratios with the national averages.

Internal provider FTEs were derived from each HMO's computerized payroll records. Medical services provided by physicians who were not employees (external FTEs) were also accounted for in the staffing ratio formulas. The researchers used the same provider specialty designations as developed by the American Medical Association (See Appendix D). Since both

health plans were reluctant to reveal individual proprietary financial and staffing information, the data was merged into one set of results.

The total average enrollment for the two HMOs during the study period was 613,354 (Hart & Wagner, 1997). That number was used as the denominator in the calculations of provider supply. Patients and providers connected with an individual practice association were excluded from the study. In all, the two HMOs employed around 890 staff physicians. Together, the two HMOs purchased another 209 FTEs in external physician support. This study revealed these HMOs provided the equivalent of 180 physicians per 100,000 enrollees (Appendix D) or roughly one physician for every 556 enrollees. There was one primary care physician per 1,280 enrollees.

The researchers quickly pointed out the similarities between physician ratios within the two HMOs and the U.S. average for physicians per 100,000 enrollees. These HMOs used 180.1 FTE physicians per 100,000 while the overall U.S. supply was stated as 180.0.

In addition to examining physician provider FTEs per 100,000, the study also examined non-physician provider FTEs. The non-physician providers were primarily nurse practitioners, physician assistants, and certified nurse midwives. The two plans had 26.2 NP/PA/CNM FTEs per 100,000 enrollees compared to the national average of 21.5 for the same group of providers (Hart & Wagner, 1997).

The results of the study indicated that the true physician-to-enrollee ratios for the two HMOs were actually much higher than reported in the literature. The authors further stated the national workforce requirement forecasts are flawed because many plans are using the lower ratios as staffing guides. The authors challenged other researchers to look into the staffing of staff-model and other managed care entities.

Another physician staffing study based its findings on a nationwide survey sent to 106 staff and group-model HMOs and represents the largest analysis of its type (Dial, 1995). In this study, the researchers mailed out surveys to HMOs that were configured as either a staff-model or group-model organization. Fifty-eight organizations responded, with 54 responses actually being used for analysis. The survey requested the demographic makeup of the HMO's enrolled population as well as the number of FTE providers by specialty type.

Responding staff-model HMOs ranged in size from 3,000 to 380,000 members, with a median of 70,000. Group-model HMOs ranged from 160 members to 2.2 million members, with a median size of 74,000 (Dial, 1995). Primary care physicians were defined as general/family practice, general internal medicine, and pediatrics. In addition, the surveys asked the respondents to define the number of hours a provider must work in order to be considered full-time. Consolidated staff-model/group-model full-time standards ranged from 27 to 50 hours, with the median of 40 hours.

Examination of the results revealed a clear-cut threshold at about the 80,000 member level. There was a greater variability in physician staffing ratios for HMOs below the 80,000 level. The research study therefore used the 80,000-member level as the dividing point in presenting staffing ratios by HMO size.

The overall median of FTE providers for all HMOs under consideration per 100,000 members was 119.9. In comparison, a 1992 study conducted by Susan Palsbo and colleagues reported a median ratio of 120.2 physicians per 100,000 for group-model HMOs (Palsbo, 1993). Moreover, a study conducted by Jonathan Weiner estimated an overall HMO physician staffing level of 120 physicians per 100,000 members, based on Group Health Association of America data (Weiner, 1994).

Similar to the ratio for all physicians, the primary care physician ratio was higher and exhibited greater variability in HMOs with fewer than 80,000 members. In HMOs with less than 80,000 members, the mean physician ratio per 100,000 was 94.9 FTEs, median of 77.2 FTEs, and standard deviation of 69.2 FTEs. In HMOs with more than 80,000 members, the mean physician FTE ratio per 100,000 was 79.2, median of 59.9, and standard deviation of 62.7 (Dial, 1995).

Planned enrollment growth was the main measure responding HMOs used in determining clinical staffing needs. In addition, most group and staff-model HMOs (60 percent) reported to using specific target member-to-physician ratios to estimate staffing needs. Over 80 percent of responding HMOs reported target

ratios between 1,500 and 2,000 members per primary care physician. The single most common (mode) target ratio was 2,000 adult members per primary care physician (Dial, 1995).

Most of the HMOs within this study used one target ratio for adult primary care physicians, another for pediatric physicians, and yet another for specialists. In addition to the adult primary care target ratios, pediatric values ranged from one FTE physician per 1,200 members to one per 1,800 members. Target ratios for specialists are dependent upon the type of provider specialty. However, specialist-to-generalist ratios are usually in the range of sixty/forty to fifty/fifty.

Most reporting HMOs did not use target ratios or other formulas to estimate non-physician staffing needs. Non-physician estimates are usually based on non-physician-to physician-ratios as opposed to non-physician-to-member ratios. Target ratios of one nurse practitioner or PA to two physicians were nearly universal among reporting HMOs.

The final result of this study was that physician-to-member ratios vary widely among HMOs, with the HMO size being the strongest correlate of the actual ratios. HMOs with less than 80,000 members usually revealed higher physician staffing ratios and a larger standard deviation than HMOs with more than 80,000 members. The researchers suggested that a minimum enrollment of 60,000 is needed to support a full complement of full-time physicians in most general hospital specialties (Kronick, 1995).

Workload-Based Provider Staffing Model

The Automated Staffing Assessment Model (ASAM) is a congressionally mandated manpower requirements model the Army Medical Command (MEDCOM) uses to validate manpower requirements. ASAM is different from virtually all civilian staffing models in that it analyzes hospital workload instead of an enrolled population in order to determine the amount of manpower a facility has earned.

ASAM derives its legal basis from Title 5 and Title 10 of the United States Code as well as several Department of Defense (DoD) and Army Regulations. Public laws further direct that DoD shall use the least costly form of manpower consistent with military and DoD requirements (Public Law 93-365). In addition, the Secretary of Defense is responsible for submitting a written report to Congress by February of each year that details the amount of manpower and overhead functions within the armed forces and the DoD (Title 10 USC).

ASAM was created as a result of reengineering the previous benchmark model used within MEDCOM. In September 1996, the newly developed model was renamed ASAM. From February 1997 to September 1998, ASAM I was initially applied to all medical treatment facilities. Beginning in October 1998, an analysis of the MEDCOM-wide ASAM implementation was conducted.

The ASAM process begins with a preliminary analysis of the treatment facility. Functions and missions are evaluated and validated in order to derive a manpower resource baseline. The team then conducts an onsite analysis to further validate

workload and analyze all sources of labor to include military, civilian, and contract personnel. Once the ASAM team leaves the facility, that site has 30 days to dispute the ASAM team manpower recommendations. If staffing issues cannot be resolved between the facility and the team, then they are sent to a MEDCOM requirements staffing expert who serves as final arbitrator. Once all issues are resolved, ASAM final results are released to Headquarters, MEDCOM. These requirements results are then routed to the Department of the Army (DA) where they are used to develop future DA-approved manpower documents.

ASAM determines manpower requirements based on a facility's size, historical workload, and earned provider requirements. The number of earned physicians then translate into a number of support and administrative staff based on pre-determined provider-to-support staff ratios and formulas.

As seen in Table 1, there are 5 major personnel types within the ASAM model.

Table 1

Personnel Categories

Category 1	Physician Providers
Category 2	Physician Assistants/ Nurse Practitioners
Category 3	Registered Nurses
Category 4	Direct Care Paraprofessionals
Category 5	Clerical/Administrative

Category 1 and 2 personnel serve as the drivers for the amount of personnel in categories 3 through 5. For instance in Table 2, every 1.0 FTE of category 1/category 2 personnel within relevant workload ranges earns the primary care service 2.0 FTEs in support personnel (Categories 3 through 5).

Table 2

ASAM Provider Planning Factors (Primary Care)

Lower Workload Range	168	503	838
Upper Workload range	502	837	1173
Category 1	0.60	1.20	2.40
Category 2	0.40	0.80	1.60
Sub total provider:	**1.00**	**2.00**	**4.00**
Category 3	0.40	0.80	1.60
Category 4	1.20	2.40	4.80
Category 5	0.40	0.80	1.60
Sub total support:	**2.00**	**4.00**	**8.00**
Total requirements earned:	**3.00**	**6.00**	**12.00**

The ASAM model analyzes either the most recent 12-month workload data or a representative 12-month period. For example, a service may have had three physicians deployed to Somalia for most of a fiscal year. Therefore, the workload data for the fiscal year would not be true representations of workload since three providers were absent for most of the year.

In this case, a representative period in which all assigned providers were present for duty would be evaluated.

ASAM primarily uses data from the facility's Medical Expense and Performance Reporting System (MEPRS) database to validate workload levels. Local records, logs and journals are also be used as sources of workload data during the ASAM team's on-site validation process.

This model also specifies the number of hours a physician should be available for patient care for the month and year. As seen in table 3, the model backs out hours for federal holidays and military training time.

Table 3

Available Provider Time

Congressional Work Year	2087 hours
Less 10 Federal Holidays	80 hours
Federal Work Year	2007 hours
Divided by 12 mo/yr =	167.25 hrs/mo
Less Non-Available Time	22.25 hrs/mo
Monthly Available Work Time	**145 hrs**

Non-available time includes time for leave, continued medical education, military training, organizational duties, and other lost time associated with permanent changes of station. The newest version of the staffing model, ASAM II, was implemented beginning in FY00. This updated model authorizes a 10% allowance for additional personnel for projected increases

in workload because of increased enrolled population for each MTF. For example, if a product line or service earns 20 providers based on workload, then ASAM II adds two additional providers.

From a command perspective, ASAM II is a tool that can be used in allocating resources, identifying effective cost centers, outsourcing workload and consolidating or closing ineffective or non-useful work centers.

Purpose

The purpose of this research project is to develop an optimal provider and specialty skill mix for BACH in support of its enrolled beneficiaries. Supporting objectives for the research project include:

- Identification of beneficiary population
  - by beneficiary category (Active Duty, Active Duty Dependents, Retirees, Retiree Dependents, Survivors)
  - by age group and gender
  - by utilization rates for each category
- Identification of current staffing levels/skill mix
  - Primary Care Physicians
  - Physician Assistants
  - Registered Nurses/Nurse Practitioners
  - Specialty Care Physicians
  - Emergency Center Providers
- Provider Workload Data
  - Total number of patient visits per provider per fiscal year

- Total number of work hours per provider per fiscal year
- Additional training hour adjustments for providers (PROFIS, CME, TDY, deployment, etc.)

• Benchmark provider/beneficiary ratios
- for Primary Care Services
- for Medical Specialty Care Services
- for Surgical Specialty Care Services
- for Hospital-based Services
- for Emergency Center Services

Initially, the following hypothesis will be tested:

Ho: There is no significant difference between the current staffing level/provider mix and the optimal staffing level/provider mix given the current BACH population healthcare requirements and workload data.

Ha: There is a significant difference between the current staffing level/provider mix and the optimal staffing level/provider mix given the current BACH population healthcare requirements and workload data.

Additional hypotheses will be developed and tested once they become apparent during the research project process.

Chapter 2 - Method and Procedures

The first step in the research process (Appendix B) was to identify Blanchfield's eligible and enrolled population and its demographic characteristics. This information was obtained from the Defense Enrollment Eligibility Reporting System (DEERS) database for the Ft. Campbell catchment area. (Appendix C) Based on the January 2000 DEERS report, beneficiaries were broken down by gender, age group and beneficiary category. Once the eligible population was identified, the DEERS database was again used to determine the number of beneficiaries actually enrolled into TRICARE Prime. Out of almost 83,000 eligible beneficiaries, 63,000 were enrolled in Tricare Prime. This number is significant because it was used as the denominator in all BACH provider-to-enrollee ratio calculations.

Once the eligible and enrollment population data were accumulated, the focus turned to identifying all credentialled providers within the facility. Each credentialled provider was identified by name and provider category. Emphasis was placed on identifying every physician, physician assistant and nurse practitioner within the hospital. The physicians were further broken down according to medical or surgical specialty. The decision to identify credentialled providers was made because it included all assigned military and civilian employees, contract providers, and outside specialists retained on a consultative basis.

Once all providers were identified, the MEPRS database was used to determine each provider's full-time equivalent (FTE).

This was necessary because not every provider was employed full-time at Blanchfield. For instance, several providers served as part-time contract personnel while other consultants were brought in on an as-needed basis. Moreover, military reservists were also traditionally assigned to Blanchfield during their annual two-week training period. Even though each provider contributed to the care of Blanchfield's enrolled population, they all provided different amounts of care according to a standardized measurement, or FTE.

Every department chief for each one the clinical product lines was also interviewed to verify the employment status of every physician and non-physician provider. Discrepancies between the FTE status as shown in MEPRS and the department chief's views on employment status were always resolved in the department chief's favor. This provided a common-sense approach to the identification and evaluation of provider FTEs.

After the enrolled population and FTE provider information were obtained, existing provider-to-enrollee ratios were calculated for each provider group, medical, and surgical specialty. These ratios allowed later comparisons between existing BACH staffing ratios and national/civilian benchmarks and averages.

Several civilian HMO staffing ratio models were then evaluated to include Group Health Cooperative of Puget Sound, Group Health Foundation of Minneapolis, Kaiser Permanente Portland, and U.S. national staffing ratio averages (See Literature Review and Appendix D). Group Health Cooperative of

Puget Sound and Group Health Foundation of Minneapolis were more closely examined because both HMOs had existed for more than twenty years and were the largest managed care plans in their respective markets (Hart, 1997). In addition, these HMOs were excellent examples of not-for-profit staff-model HMOs. Certainly not as large or as mature as these HMOs, the Tricare/Blanchfield HMO can also be roughly categorized as a not-for-profit staff-model HMO and the largest within the Ft. Campbell-Clarksville-Hopkinsville community.

In addition to civilian staffing standards, the Department of Defense Automated Staffing Assessment Model (ASAM) was closely examined. ASAM is a manpower requirements model that uses current provider workload to derive appropriate provider staffing levels. Templates, or formulas are used to determine the number of patient visits a full-time equivalent should see in one year. MEPRS workload data is then extracted to determine the total actual workload for each workload area.

The annual workload was entered into the appropriate ASAM formula to determine how many providers a section had earned. For instance, the ASAM formula for Primary Care may determine 5,700 patient visits are required to earn one full-time equivalent family practice provider. If patient workload within Primary Care for the year was 11,400 patients, then Primary Care earned two Primary Care providers (11,400 patient visits/5,700 patient visits per provider = 2 providers). Similar formulas were used to determine the support staff-to-provider ratios within each area. In addition, ASAM formulas were developed for

each one of Blanchfield's product lines and all surgical and medical specialties.

Once all staffing models were evaluated (including ASAM), the current BACH provider-to-enrollee ratios were compared to these existing models. After comparisons were made, an optimal BACH provider staff was chosen that best fit the needs of the enrolled population.

Attention was given to mission-related Professional Filler System (PROFIS) requirements not reflected in the civilian staffing models. For instance, workload levels may have indicated that a full-time neurologist was not required in the BACH facility. However, PROFIS requirements mandated at least one neurologist be assigned at all times. In these instances, a neurologist was still authorized in order to fulfill the mandated PROFIS mission.

Scope

The scope of the project was limited to provider and ancillary services offered at Blanchfield Army Community Hospital. Specifically, the staffing and workload for the four product lines-Perioperative Services, Women's Health, Primary Care and Behavioral Sciences-were examined. In addition, ancillary, medical, and surgical specialty services were evaluated. The ultimate research objective was to create a provider staff that closely correlated with both current population workload data and staffing ratio requirements.

Assumptions and Limitations

The following assumptions were made during the course of this project:

- MEPRS data accurately reflected the number of FTEs for each provider in each specialty.
- DEERS eligibility and enrollment data accurately reflected actual Blanchfield patient population.
- Definitions for the primary care and specialty providers were consistent amongst Blanchfield Army Community Hospital, civilian HMOs, and national averages. For instance, primary care providers were uniformly considered to be those that specialized in family practice, general internal medicine, and pediatrics.
- The ASAM requirements model effectively captured all necessary workload data for all levels and specialties of providers.

The following limitations were imposed during the research effort:

- Both the population and provider data were extracted from the January 2000 time frame. Current population and provider data may or may not be consistent with those results
- Civilian HMO data were extracted from studies published between 1995 and 1997. Current industry staffing ratios may or may not be consistent with those results. However, several follow-up articles indicated current provider-staffing ratios are still consistent with earlier published studies.
- Additional resource constraints such as funding, space, and the ability to attract necessary healthcare professionals in a

rural community were all beyond the scope of this research project.

- In order to directly compare Blanchfield provider FTEs to civilian HMO provider FTEs, the staffing numbers had to be extrapolated out from the current enrolled population of 63,000 out to 100,000. In essence, BACH was viewed as though they had at least 100,000 enrollees. At 100,000 actual enrollees, Blanchfield may have significantly different provider FTE levels and ratios than the calculated levels.

Validity, Reliability, and Practicality

The characteristics of a good research study are validity, reliability and practicality (Cooper & Schindler, 1998). Validity refers to the extent a test measures what it was intended to measure. This research project concentrated on internal validity which is the ability of a research instrument to measure what it is purported to measure. This study also examined whether or not MEPRS and ASAM data accurately depicted the size, demographic makeup and healthcare requirements of the Blanchfield beneficiary population. Specifically, the ASAM model was used to validate all provider workload data within Blanchfield.

Reliability refers to the degree a measure provides consistent results. However, reliability is a necessary but not sufficient condition for validity. This study applied the patient population data to several staffing ratio models to arrive at a consistent level and mix of providers. In addition, the measurement instruments should work similarly under

different conditions. The natural results of the research project should be the development of a staffing model that will be flexible enough to serve Blanchfield's changing needs well into the 21st century.

Although not often discussed, a third criterion used to evaluate measurement tools is practicality (Cooper & Schindler, 1998). Since this project was developed as applied management research, the final product should be economical, convenient and understandable. Ideally, the Blanchfield command leadership will be able to use the results of this study to solve problems and make decisions concerning the provider staff.

Example Application

Portions of this research project were patterned after a similar graduate project conducted by CPT Gerald Ledlow (Class of 1996) entitled Animated Simulation: Optimal Family Practice Clinic Staffing and Process Configuration. The purpose of CPT Ledlow's study was to determine the optimal provider staffing and process configuration for the Heidelberg MEDDAC Family Practice Clinic.

CPT Ledlow utilized several statistical methods during his analysis to include an analysis of variance (ANOVA) and Pair-Wise t-Test of Means. Alternative models such as an all-physician model and a combination model (physician and non-physician providers) were developed and analyzed in order to determine the optimal staff for the Family Practice Clinic. Given the utilization rates and FY95 enrollment, CPT Ledlow

recommended that the all-physician model be resourced and implemented.

The CPT Ledlow study was chosen as the example application because of the similarities between the purpose of his project and this current proposal. This project also analyzed the current patient population and provider staffing and workload data and attempted to develop an optimal staffing model for the Blanchfield Army Community Hospital.

Author's note: CPT Ledlow's study was later published (in a condensed version) in the March/April 1999 issue of Journal of Healthcare Management. He left the military and now serves as the Director of Healthcare Services Programs, College of Extended Learning, Central Michigan University. The co-author of the published article was COL Donald Bradshaw, Deputy Commander for Clinical Services, U.S. Army MEDDAC, Heidelberg, Germany.

Chapter 3 - Results

Blanchfield Patient Population

The first step in the research process was to identify BACH's eligible and enrolled population during January 2000. As seen in figure 1 and Appendix C, Blanchfield had a DEERS eligible population of almost 83,000. Of this number, 54 percent were male, 46 percent were female. There were 23,993 active duty personnel that comprised 29 percent of eligible beneficiaries. Active duty dependents numbered 34,979, or 43 percent of the total eligible beneficiaries. Retirees and their dependents totaled another 21,939, or 26 percent of DEERS eligible beneficiaries. Survivors accounted for the remaining 2 percent of the beneficiary population.

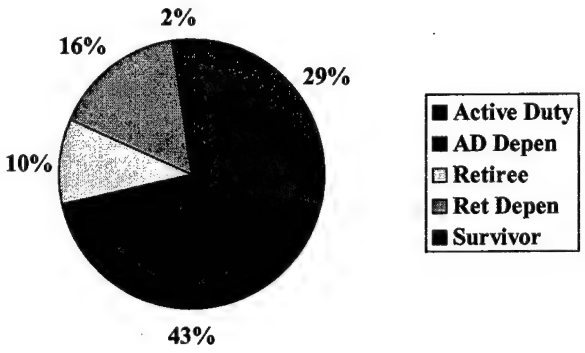

Figure 1: DEERS Eligible Population

Out of almost 83,000 eligible beneficiaries, 63,013 were enrolled in Tricare Prime as of January 2000. This means BACH was at risk for over 76 percent of the entire beneficiary population. From this enrolled population, 39 percent were active duty, 52 percent were their dependents, with the remaining 9 percent retirees and their dependents (Figure 2). Together, active duty and their dependents accounted for 91 percent of total Prime enrollment.

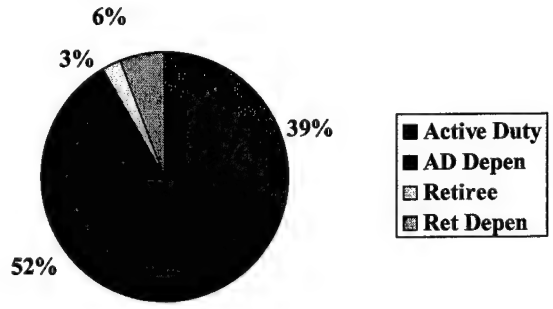

Figure 2: DEERS Enrolled Population

Out of the total eligible population, 30 percent were between the ages of 0 and 17, 40 percent were between 18 and 34, 25 percent were between 35 and 64, and 5 percent were 65 and older (Table 4).

Table 4

Age Demographics

Age	Beneficiaries	Percentage
0 - 17	25,225	30
18 - 34	33,131	40
35 - 64	20,431	25
65 and older	3,932	5
Totals	82,719	100

Altogether, 70 percent of Blanchfield's eligible population was 34 years of age and younger. Clearly, BACH continued to be at risk for a very young population within its catchment area.

Blanchfield Providers

Once the beneficiary population was examined, all of BACH's physician and non-physician providers were then identified. As seen in appendix E, there were 56 credentialled physician providers within the primary care specialties. This translated into 48.4 FTEs and 76.8 FTEs per 100,000 enrollees. There were only 6 medical specialists credentialled at Blanchfield. This worked out to a mere 2.2 FTEs and 3.5 FTEs per 100,000. Full-time specialists were assigned only within allergy and dermatology. As part of the six specialists, four cardiologists assigned to a prominent heart center in Nashville served as consultants to BACH. However, they contributed only 0.2 FTEs in cardiology consultation to eligible beneficiaries.

There were 32 surgical specialists credentialled at Blanchfield. This worked out to 26.5 FTEs in surgical specialty care and 42.1 FTEs per 100,000. However, there were no neurosurgeons assigned to the facility. Hospital-based specialists such as anesthesiologists, pathologists, and radiologists totaled 15 and accounted for 12.0 support FTEs and 19.0 FTEs per 100,000.

There were 18 emergency medicine physicians assigned to Blanchfield in January 2000. However, this translated into only 8.0 FTEs and 12.7 FTEs per 100,000 for the facility. The major reason is that Blanchfield had a personal services contract for 2.0 FTEs to work in the Emergency Center on an "as-needed" basis. These 2.0 FTEs were spread out amongst 12 contract personnel.

Among the non-physician providers, there were 39 credentialled physician assistants that accounted for 38.7 FTEs and 61.4 FTEs per 100,000 (Appendix G). Virtually all PAs worked within the Red, White, Blue, Gold, and troop medical clinics. The 17 nurse practitioners accounted for 15.1 in FTEs or 24.0 FTEs per 100,000. Again, almost all NPs worked within the primary care and troop medical clinics. There were 8 certified nurse midwives that translated into 7.0 FTEs. All nurse midwives worked within Women's Health Services. Finally, there were 16 nurse anesthetists that contributed 12.5 FTEs in provider support. The nurse anesthetists were all assigned to Perioperative Services. Altogether, there were 80 credentialled

non-physician providers or 73.3 FTEs in mid-level support. This translated into 116.4 FTEs per 100,000 enrollees (Appendix G).

Comparison of HMO models to U.S. averages

As shown in table 5 and appendix D, the selected HMO FTEs had mixed results when compared to U.S. FTE averages per 100,000. For total primary care, both Group Health of Puget Sound and Kaiser of Portland were well below U.S. averages. However, the combined average of Group Health Foundation of Minneapolis and Group Health of Puget Sound was 19 percent above the U.S. average for total primary care.

Table 5

HMO FTEs and U.S. Totals per 100,000

Specialty	Puget Sound/ Minneapolis	Puget Sound	Kaiser	U.S.
Primary Care	78.2	57.1	53.0	65.7
Medical	20.1	11.8	14.7	18.0
Surgical	39.3	33.9	32.7	41.5
Hospital-Based	24.6	16.7	16.5	22.0
Other	17.9	1.2	12.3	20.3
Overall Total	180.1	120.7	129.2	167.5

For the medical specialties, Puget Sound and Kaiser again were below the national averages. However, the combined Puget Sound/Group Health giant was almost 12 percent above the national averages. Within the surgical specialties, all selected HMOs were below the U.S. average. The reason may be

that the HMOs required less in surgical staffing due to less surgical referrals from the primary care and medical specialty areas. In addition, this may indicate a trend in which some of the minor surgeries were being done as an outpatient within the primary care setting.

For the hospital-based specialties, this staffing trend continued. Both Puget Sound and Kaiser were significantly below the U.S. average (24 and 25 percent respectively). The combined Puget Sound/Group Health Foundation HMO was 12 percent above the national average.

In the "other" category, all HMOs were below the national average of 20.3 FTEs per 100,000 enrollees. This was primarily due to significantly lower levels of psychiatric providers within the different HMOs (Appendix D). This may be due to the fact that many types of psychiatric care were not provided by the HMOs and subsequently not reimbursed by insurance companies.

Overall, the U.S. average for physician FTEs was 167.5 per 100,000 enrollees. Both Kaiser of Portland and Group Health of Puget Sound were staffed at levels far below the U.S. average (table 5). However, when the Puget Sound averages were combined with the staffing levels of Group Health Foundation of Minneapolis, the overall total of FTEs per 100,000 exceeded the national average by 7.5 percent (Appendix D). Since Group Health of Minneapolis chose not to break out its numbers, this researcher can only speculate that its averages were well above even the overall total of 180.1 per 100,000 since Puget Sound's

stand-alone averages were significantly below national averages in virtually every category.

The overall results of the HMO comparisons indicated that although several HMOs were parsimonious in physician staffing, Group Health Foundation of Minneapolis appeared to be very well staffed in most specialty areas. Group Health justified its higher staffing levels by stating they have chosen to maximize other objectives such as consumer satisfaction and member responsiveness (Hart, 1997).

Comparison of Blanchfield to Civilian HMOs

In the area of primary care, Blanchfield was staffed above both the U.S. average and selected civilian HMOs. BACH's 76.8 FTEs per 100,000 enrollees was 11.1 FTEs above the national average and approximately 20 FTEs above the staffing levels for both Group Health of Puget Sound and Kaiser of Portland (Appendix F). The primary reason for this staffing level was that BACH had over 20 FTEs above the national average in family practice physicians. This was slightly offset by a lower than average number of FTEs in the area of general internal medicine.

Blanchfield was significantly below both national and civilian HMO benchmarks in the area of medical specialties. Blanchfield had only one full-time allergist and one full-time dermatologist assigned to the facility. A small group of outside cardiologists served the facility on a consultative basis. However, they contributed only 0.3 FTEs per 100,000 enrollees. There were no other medical specialists assigned or credentialled within the facility.

As a result, there were only 3.5 FTEs in medical specialty support within BACH compared with 11.8 FTEs assigned to Puget Sound, 14.7 FTEs assigned to Kaiser, and 18.0 FTEs in the national average (table 6).

Table 6

FTE Comparisons

Specialty	Blanchfield	Puget Sound	Kaiser	U.S.
Primary Care	76.8	57.1	53.0	65.7
Medical	3.5	11.8	14.7	18.0
Surgical	42.1	33.9	32.7	41.5
Hospital	19.0	16.7	16.5	22.0
Other	21.3	1.2	12.3	20.3
Overall Total	162.6	120.7	129.2	167.5

Comparison of Blanchfield to ASAM Model

Blanchfield had 48.4 total FTEs in the area of primary care. The ASAM team, during their visit in March 2000, validated 48.2 physician requirements based on primary care workload (Appendix H). This result meant that primary care earned virtually the same amount of FTEs as was already assigned to the facility. Specifically, family practice physicians earned 0.6 more FTEs based on last year's workload figures. However, general internal medicine physicians earned 2.0 FTEs below actual assigned FTEs. This reduction in earned requirements for internal medicine was probably more a function

of workload performance than physician work habits and accessibility. Additionally, since seventy percent of Blanchfield's eligible population was 34 years old and younger, the internists pool of patients was not in need of significant internal medicine care.

In the area of medical specialties, the ASAM model validated 3.6 FTE physician requirements. This was 1.4 FTEs over what was assigned to medical specialties. Specifically, the one assigned allergist actually earned 1.4 FTEs based on historical workload. Incredibly, this allergist also served as the chief of medical specialties. Another highlight was the dermatology section. The one full-time dermatologist earned 2.0 FTEs based on workload figures supplied to the ASAM team. The physicians and support staff assigned to the fragile medical specialties department definitely earned requirements above current FTE staffing levels.

With regards to the surgical specialties, the facility earned 2.5 FTEs more than what was currently on staff. The top performing service line was obstetrics/gynecology, which earned 2.7 more FTEs than the 13.0 FTEs on staff. However, this researcher must point out the 13.0 provider FTEs included 4.0 FTEs in nurse practitioners. Within ASAM, nurse practitioners were treated the same as physician providers in validating earned requirements. Other areas that earned requirements above current staff included orthopedics and otolaryngology. Sections that did not quite earn their current FTEs included; general surgery (-1.0 FTEs), ophthalmology (-0.1 FTEs), and

urology (-0.4 FTEs). Again, given Blanchfield's very young patient population, it wasn't surprising to see these workload results in areas usually associated with older patient care. Conversely, the level of earned FTEs above current staff levels for OB/GYN was also associated with a young adult population giving birth to many babies.

The only area within the hospital-based specialties that could be compared to the ASAM model was anesthesiology. That area earned 1.2 more FTEs than the current staffed amount of 3.0. The ASAM model did not recognize providers in the areas of pathology and radiology, just support staff.

Finally, in the "other" category, emergency medicine was one of two areas that earned more than they were staffed. Although staffed at 12.0 provider FTEs, their workload justified 13.9 FTE requirements. Emergency personnel included 4.0 FTEs in emergency physician assistants. Within the ASAM model, emergency center PAs were treated similar to physician providers in calculating earned requirements.

Another solid performer was the psychiatry service. They were understaffed at only 10.0 FTEs, yet earned 13.4 provider FTEs based on their workload. In reality, the psychiatry service could justify hiring another 3 providers given its overwhelming workload. Again, the demand for psychiatric services was understandable given the arduous readiness and combat mission of the 101st Airborne Division and the impact this had on both active duty soldiers and their dependents.

A direct comparison could not be made between overall FTEs and earned requirements due to differences in ASAM methodology in the areas of pathology and radiology. However, if we assume radiology and pathology had earned their current FTEs, then the 116.5 in current FTEs would have earned 126.5 FTE requirements. This represents an 8.5 percent increase in earned requirements based on workload reported to the ASAM team.

Chapter 4 - Discussion

The purpose of this research project was to develop an optimal provider and specialty skill mix for Blanchfield Army Community Hospital in support of its 63,000 enrolled beneficiary population. The following discussion will suggest the optimal staff based on the needs of the population, current staffing levels, provider workload data, and population-based provider-to-enrollee benchmark ratios.

The results of the previous chapter indicate Blanchfield's population is heavily weighted towards those 34 years old and younger. In fact, 70 percent of the population falls within this age group. This indicates an increased need for family practice, pediatric, OB/GYN, emergency, and psychiatric care. Indeed, provider workload data entered into the ASAM requirements model identified a tremendous demand for these modalities.

Although Blanchfield was found to be staffed above both U.S. averages and selected HMOs in the area of primary care, this level can be justified. First, the literature review indicated that small HMOs like Blanchfield require a higher than average staffing in order to provide the necessary services to its enrollees. Second, the primary care workload actually suggested BACH could justify providing additional primary care FTEs to meet the needs of its unique population. Based on this information, this researcher suggests retaining the current level of primary care FTEs with the additional option of either

hiring an additional FTE or moving providers from other areas such as general internal medicine into family practice.

With the exception of Allergy and Dermatology, Blanchfield has virtually no medical specialties. Although current workload, through the ASAM model, justified another 1.4 in FTEs, this would still leave Blanchfield far below national and selected HMO averages. This researcher suggests further research into the area of medical specialties to determine whether or not Blanchfield should offer these services to its enrollees.

Within the surgical specialties, the general surgery staffing numbers were above HMO averages but below national standards. However, provider workload indicated Blanchfield may be slightly overstaffed by approximately one FTE. This can be remedied by either moving a provider into another specialty or through bringing in additional workload by providing additional healthcare to retirees and their dependents.

Unless family planning practices significantly change, BACH could hire another three OB/GYN providers to care for all delivered babies and their mothers. The thirteen FTEs in OB/GYN physicians and nurse practitioners continue to perform the work of almost sixteen providers. Although BACH OB/GYN staffing levels were above all evaluated civilian averages, this number was easily justified given the very young and fertile patient population. Along with primary care, women's health services will continue to be the most prominent specialty within the hospital.

Orthopedics was another area that was staffed above all evaluated averages. However, this was also an area that justified additional FTEs based on historical workload. Unless the 101st Airborne Division divests itself of the large number of physically demanding training missions and deployments, there will always be more than adequate workload to justify all orthopedic surgeons and support staff. This was one area that could not be directly compared to any civilian HMO or national averages. The orthopedic workload at Blanchfield is unique and directly related to the missions of the military combat arms units located on Ft. Campbell.

The hospital-based specialties offered really no clear-cut analysis and discussion based on staffing results. The anesthesiology service earned 1.2 FTEs more than current staff based on workload. However, this would still leave this service well below national and HMO averages. Both pathology and radiology were above all evaluated averages. This was justified by the small size of Blanchfield's enrolled population of less than 80,000.

Emergency medicine was another clear example in which BACH's provider staffing levels were well above all other averages yet workload justified additional FTEs. Based on workload, Blanchfield could theoretically hire an additional two FTEs in either emergency physicians or physician assistants. Moreover, based on BACH's population, this workload result was not surprising. Young parents have young children that often

complain of colds, earaches, and other minor illnesses at all hours of the day and night.

Whereas more experienced parents self-diagnose and self-treat minor illnesses, younger families often opt to bring their children into the emergency room at the first sight of illness or abnormality. Nurse advice lines, acute care clinics, and treatment handbooks have all been implemented in attempts to change population behavior. However, until new parents gain confidence and experience, the demand for emergency medicine will remain steady.

In the area of psychiatry, Blanchfield significantly lagged behind national averages. However, provider workload indicated a tremendous patient demand for this type of specialized service. Although staffed at ten FTEs, the workload suggested that over thirteen requirements had been earned. In addition to the patients being seen by an overburdened psychiatric staff, there is undoubtedly a long list of enrollees that doesn't receive this badly needed care. Psychiatry is different from other specialties in that care not provided to a patient can often lead to disastrous and litigious results for both that patient and other innocent people.

The enrolled population stationed at Ft. Campbell is at very high risk due to tremendous demands placed on individual soldiers and their family members. The area of psychiatry must be looked at more closely not only by the hospital leadership but also by the installation command. Ft. Campbell must find a

way to adequately provide this healthcare benefit for the entire eligible beneficiary population.

To summarize, the results of the research project generally supported the alternate hypothesis that there is an identifiable difference between the current staffing level/provider mix and the optimal staffing/provider mix given the current Blanchfield population healthcare requirements and historical workload data. Overall, slight staff increases based on workload can be justified in the areas of family practice, pediatrics, obstetrics/gynecology, emergency medicine, and psychiatry. Slight decreases in provider staffing should be considered in the areas of general internal medicine and general surgery unless Blanchfield can bring in additional workload by expanding enrollment opportunities for more retirees and their family members.

Chapter 5 - Conclusion and Recommendations

This researcher concludes from the results that Blanchfield Army Community Hospital is generally well staffed compared with several of the civilian HMOs. However, the data support that Blanchfield requires a slightly higher level of staffing due to its relatively small, enrolled population. In addition, Blanchfield serves as the only "HMO" within the Ft. Campbell/Clarksville/Hopkinsville community. There is really no other healthcare choice for enrolled beneficiaries within this community. Although the selected HMOs were distinctly larger and more mature than Blanchfield, this project served as a starting point for future comparisons. The comparisons also pointed out areas in which the institution should further evaluate its staffing practices.

Although Blanchfield fared well compared to other HMOs, the hospital justified virtually all its clinical staff according to the workload-based Automated Staffing Assessment Model. Under ASAM, workload credit was given for military-specific requirements such as deployments, physical training, and continued military and civilian education. Although ASAM has arguably many statistical flaws, it validated almost all of Blanchfield's clinical staffing requirements. If workload is used as a measurement for the population's healthcare needs, then we recognize the current staffing is generally being utilized in a very efficient manner. Several areas need further examination, but for the most part, the hospital does an

excellent job in providing healthcare to its enrolled population.

A word of caution is in order, however. The ASAM team, during its spring visit to the facility, indicated a DoD population-based staffing model is currently being developed that will replace the current model. If and when this new model is implemented, it may prove to be not as generous in its staffing allowances. For instance, the new staffing model may direct all DoD healthcare facilities to come more in line with established civilian HMO averages. If that becomes the case, then Blanchfield (and other military community hospitals) may face significant cuts regardless of the level of documented workload.

The advantage of switching to a population-based model within the facility may be the motivator to expend a greater level of resources on preventive care and education. The current system still rewards facilities by the amount of clinical visits, not on the civilian industry practice patterns for preventive medicine. Let's hope future staffing models will reward positive staff and population behaviors.

As a result of this research project, several recommendations are being made:

1. Conduct further analysis into the facility's medical specialty department. The department is currently comprised of just one allergist (who will soon retire) and one dermatologist plus a small collection of cardiology consultants. Conduct an economic analysis to determine whether or not Blanchfield can

bring this type of workload in-house for its enrolled population. This may prove to be an excellent opportunity for Blanchfield to expand its current level and selection of healthcare services.

2. Further examine the facility's Behavioral Science Service. Blanchfield is staffed well below U.S. averages for psychiatrists. Even though the hospital is under-staffed, it earned over 3 FTEs above current staffing levels. This apparent contradiction may be explained by the fact that psychologists, paraprofessionals, and even a physician assistant are accomplishing a great deal of the workload usually handled by a psychiatrist. Moreover, the definition of a psychiatric provider was inconsistent within the literature review, ASAM methodology, and current hospital practices.

In all likelihood, the Behavioral Science Service (psychiatry service) continues to give care to the best of its ability given its staffing and educational levels. However, the facility may require several additional psychiatrists to properly evaluate and provide an appropriate amount of support to the enrolled population.

3. Further analyze the workload and staffing patterns within Women's Health Services. The average number of newborns continues to rise within the facility. What is the ratio of unplanned to planned births? The facility may want to consider an increased emphasis on family planning and contraceptive options. Again, this would require a staff model that rewards

preventive practices as much as the total number of birthing procedures performed.

4. Further research the development of a population-based staffing model within the Department of Defense. Facilities should begin to plan for the future implementation of a new model that may occur within the next five years. The process should begin with an analysis and comparison of Blanchfield with similar sized facilities (based on population, not beds) within both the military and civilian communities. How do we compare with other Army Community Hospitals? How do we compare with other civilian organizations that provide care within a rural community? The answers to these and other questions will give us an idea of whether the facility may ultimately be required to make significant staff cuts or changes to its current mix of providers.

5. Consider expanded enrollment opportunities for the community's eligible retiree population. Retirees and their dependents currently comprise only 9 percent of the total enrolled population. An increased retiree enrolled population would generate additional needed workload in the areas of medical specialties, general surgery, ophthalmology, urology, and general internal medicine. Moreover, an increased retiree population may justify an expanded medical specialties department discussed in recommendation number 1.

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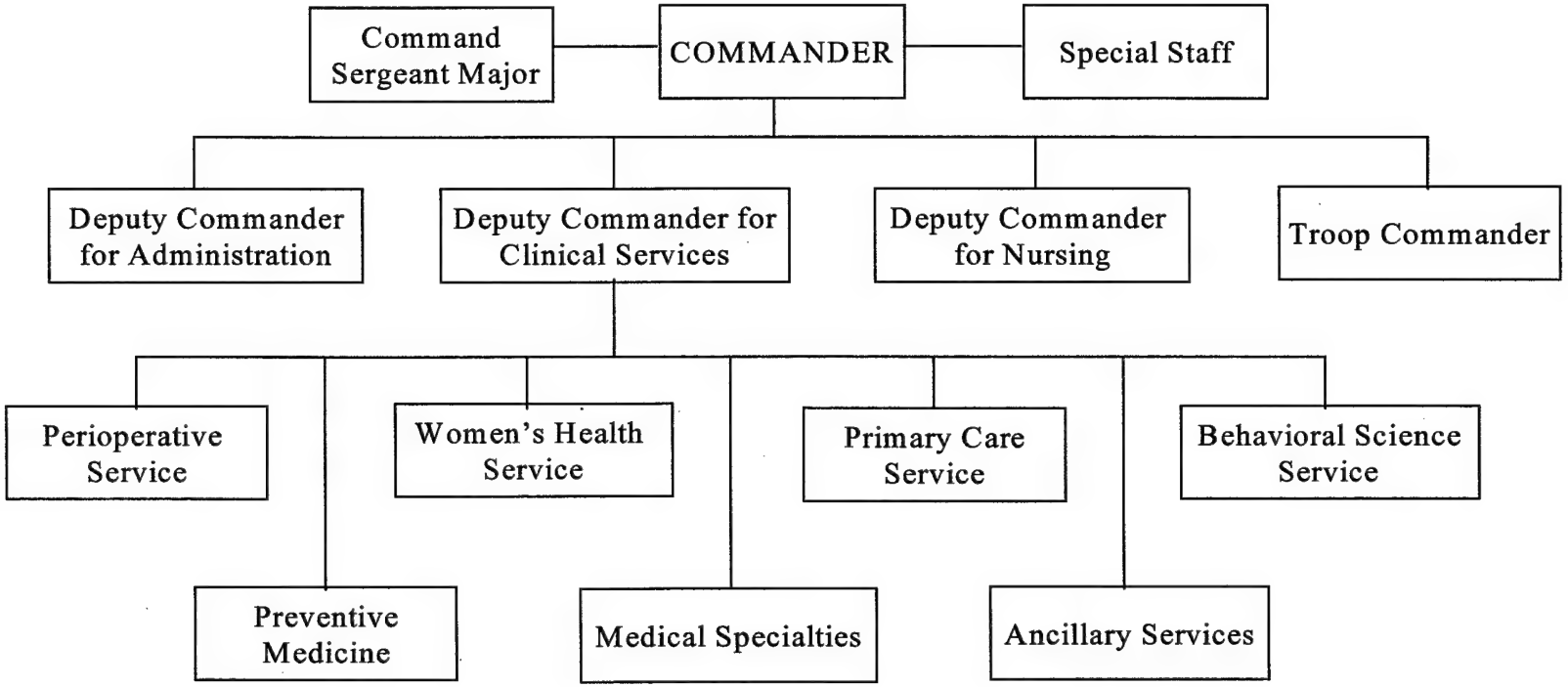
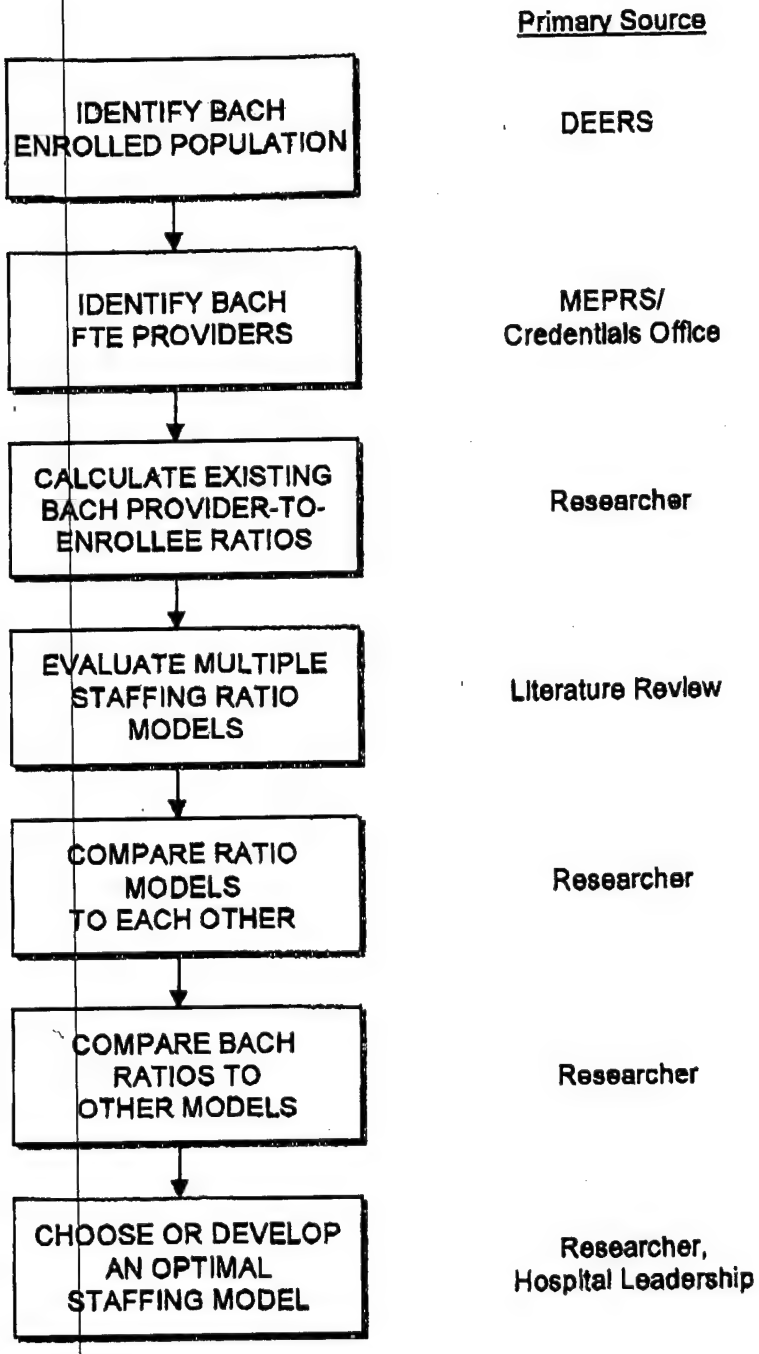
Appendix A Blanchfield Organization Chart



Appendix B The Research Process



Appendix C DEERS Eligible Population
Ft. Campbell Catchment Area January 2000

	Beneficiary Category					
	Active Duty	Active Duty Dependent	Retiree	Retiree Dependent	Survivor/ Other	Total
Male Age Group						
0-4	0	4228	0	135	26	4389
5-14	0	5591	0	1173	87	6851
15-17	4	840	0	748	36	1628
18-24	8352	525	5	819	50	9751
25-34	9339	313	70	21	73	9816
35-44	3361	155	1594	42	38	5190
45-64	294	38	4668	37	37	5074
65 and over	1	7	2060	5	18	2091
Total Males	**21351**	**11697**	**8397**	**2980**	**365**	**44790**

	Active Duty	Active Duty Dependent	Retiree	Retiree Dependent	Survivor/ Other	Total
Female Age Group						
0-4	0	3988	0	162	27	4177
5-14	0	5400	0	1143	87	6630
15-17	0	812	0	718	20	1550
18-24	1179	3678	4	863	55	5779
25-34	1115	6322	20	258	70	7785
35-44	327	2588	123	1811	83	4932
45-64	21	464	94	4209	447	5235
65 and over	0	30	11	1146	654	1841
Total Females	**2642**	**23282**	**252**	**10310**	**1443**	**37929**
Grand Total	**23993**	**34979**	**8649**	**13290**	**1808**	**82719**

Appendix D Comparison of Selected HMO FTEs and U.S. Totals per 100,000

Specialty	Puget Sound/ Minneapolis	Group Health Puget Sound	Kaiser Portland	U.S. Averages per 100,000
Primary Care				
Family Practice	42.6	N/A	15.6	29.3
General Internal Medicine	20.1	N/A	26.3	23.3
Pediatrics	15.5	N/A	11.1	13.1
Total Primary Care	**78.2**	**57.1**	**53.0**	**65.7**
Medical				
Allergy	1.4	1.1	1.5	1.1
Cardiology	5.0	2.9	2.8	4.9
Dermatology	2.6	2.6	2.4	2.5
Endocrinology	1.0	0.0	0.8	0.8
Gastroenterology	2.9	0.0	1.5	2.4
Hematology/Oncology	2.4	1.6	2.2	1.9
Infectious Disease	0.6	0.6	1.1	0.6
Nephrology	1.3	0.9	0.7	1.1
Pulmonary Medicine	1.9	1.4	1.3	1.8
Rheumatology	1.0	0.7	0.4	0.9
Total Medical Specialty	**20.1**	**11.8**	**14.7**	**18.0**
Surgical				
General	8.8	5.9	6.5	10.8
Neurosurgery	1.0	0.4	1.3	1.4
Obstetrics/Gynecology	11.3	10.0	10.8	11.4
Ophthalmology	5.5	5.0	2.3	5.6
Orthopedics	6.4	6.7	5.5	6.5
Otolaryngology	3.0	3.0	3.2	2.7
Urology	3.3	2.9	3.1	3.1
Total Surgical Specialty	**39.3**	**33.9**	**32.7**	**41.5**
Hospital-Based				
Anesthesiology	9.1	9.0	5.5	9.2
Pathology	1.8	0.0	3.1	4.2
Radiology	13.7	7.7	7.9	8.6
Total Hospital-Based	**24.6**	**16.7**	**16.5**	**22.0**
Other				
Emergency Medicine	5.2	0.0	6.3	5.6
Psychiatry	7.2	0.0	4.8	12.0
Neurology	2.3	1.2	1.2	2.7
Misc.	3.2	0.0	0.0	
Total Other	**17.9**	**1.2**	**12.3**	**20.3**
Overall Total	**180.1**	**120.7**	**129.2**	**167.5**

Appendix E Blanchfield Army Community Hospital Physician Providers

Specialty	Credentialled Personnel	FTEs	FTEs/100,000*
Primary Care			
Family Practice	34	31.3	49.6
General Internal Medicine	9	9.0	14.3
Pediatrics	13	8.1	12.9
Total Primary Care	**56**	**48.4**	**76.8**
Medical			
Allergy	1	1.0	1.6
Cardiology	4	0.2	0.3
Dermatology	1	1.0	1.6
Endocrinology	0	0.0	0.0
Gastroenterology	0	0.0	0.0
Hematology/Oncology	0	0.0	0.0
Infectious Disease	0	0.0	0.0
Nephrology	0	0.0	0.0
Pulmonary Medicine	0	0.0	0.0
Rheumatology	0	0.0	0.0
Total Medical Specialty	**6**	**2.2**	**3.5**
Surgical			
General	7	5.5	8.7
Neurosurgery	0	0.0	0.0
Obstetrics/Gynecology	9	9.0	14.3
Ophthalmology	3	2.0	3.2
Orthopedics	8	6.0	9.5
Otolaryngology	3	2.0	3.2
Urology	2	2.0	3.2
Total Surgical Specialty	**32**	**26.5**	**42.1**
Hospital-Based			
Anesthesiology	4	3.0	4.8
Pathology	3	3.0	4.8
Radiology	8	6.0	9.5
Total Hospital-Based	**15**	**12.0**	**19.0**
Other			
Emergency Medicine	18	8.0	12.7
Psychiatry	4	3.0	4.8
Neurology	3	1.4	2.2
Misc. (Prev Med)	1	1.0	1.6
Total Other	**26**	**13.4**	**21.3**
Overall Total	**135**	**102.5**	**162.6**

Note: FTEs/100,000 ratio developed using current enrolled population of 63,000.

Appendix F Comparison of Blanchfield with Selected HMOs and U.S. Averages per 100,000

Specialty	Blanchfield Hospital	Group Health Puget Sound	Kaiser Portland	U.S. Averages per 100,000
Primary Care				
Family Practice	49.6	N/A	15.6	29.3
General Internal Medicine	14.3	N/A	26.3	23.3
Pediatrics	12.9	N/A	11.1	13.1
Total Primary Care	**76.8**	**57.1**	**53.0**	**65.7**
Medical				
Allergy	1.6	1.1	1.5	1.1
Cardiology	0.3	2.9	2.8	4.9
Dermatology	1.6	2.6	2.4	2.5
Endocrinology	0.0	0.0	0.8	0.8
Gastroenterology	0.0	0.0	1.5	2.4
Hematology/Oncology	0.0	1.6	2.2	1.9
Infectious Disease	0.0	0.6	1.1	0.6
Nephrology	0.0	0.9	0.7	1.1
Pulmonary Medicine	0.0	1.4	1.3	1.8
Rheumatology	0.0	0.7	0.4	0.9
Total Medical Specialty	**3.5**	**11.8**	**14.7**	**18.0**
Surgical				
General	8.7	5.9	6.5	10.8
Neurosurgery	0.0	0.4	1.3	1.4
Obstetrics/Gynecology	14.3	10.0	10.8	11.4
Ophthalmology	3.2	5.0	2.3	5.6
Orthopedics	9.5	6.7	5.5	6.5
Otolaryngology	3.2	3.0	3.2	2.7
Urology	3.2	2.9	3.1	3.1
Total Surgical Specialty	**42.1**	**33.9**	**32.7**	**41.5**
Hospital-Based				
Anesthesiology	4.8	9.0	5.5	9.2
Pathology	4.8	0.0	3.1	4.2
Radiology	9.5	7.7	7.9	8.6
Total Hospital-Based	**19.0**	**16.7**	**16.5**	**22.0**
Other				
Emergency Medicine	12.7	0.0	6.3	5.6
Psychiatry	4.8	0.0	4.8	12.0
Neurology	2.2	1.2	1.2	2.7
Misc.	1.6	0.0	0.0	
Total Other	**21.3**	**1.2**	**12.3**	**20.3**
Overall Total	**162.6**	**120.7**	**129.2**	**167.5**

Appendix G Blanchfield Army Community Hospital Non-Physician Providers

	Credentialled Personnel	FTEs	FTEs/100,000*
Physician Assistants	39	38.7	61.4
Nurse Practitioners	17	15.1	24.0
Certified Nurse Midwives	8	7.0	11.1
Certified Nurse Anesthetists	16	12.5	19.8
Total Non-Physician Providers	**80**	**73.3**	**116.4**

Note: FTEs/100,000 ratio developed using current enrolled population of 63,000.

Appendix H Automated Staffing Assessment Model
Current FTEs vs. Earned Requirements

Specialty	Current FTEs	Earned Requirements	Difference
Primary Care			
Family Practice	31.3	31.9	0.6
General Internal Medicine	9.0	7.0	-2.0
Pediatrics	8.1	9.3	1.2
Total Primary Care	**48.4**	**48.2**	**-0.2**
Medical			
Allergy	1.0	1.4	0.4
Cardiology	0.2	0.2	0.0
Dermatology	1.0	2.0	1.0
Endocrinology	0.0	0.0	0.0
Gastroenterology	0.0	0.0	0.0
Hematology/Oncology	0.0	0.0	0.0
Infectious Disease	0.0	0.0	0.0
Nephrology	0.0	0.0	0.0
Pulmonary Medicine	0.0	0.0	0.0
Rheumatology	0.0	0.0	0.0
Total Medical Specialty	**2.2**	**3.6**	**1.4**
Surgical			
General	5.5	4.5	-1.0
Neurosurgery	0.0	0.0	0.0
Obstetrics/Gynecology	13.0	15.7	2.7
Ophthalmology	2.0	1.9	-0.1
Orthopedics	6.0	6.7	0.7
Otolaryngology	2.0	2.6	0.6
Urology	2.0	1.6	-0.4
Total Surgical Specialty	**30.5**	**33.0**	**2.5**
Hospital-Based			
Anesthesiology	3.0	4.2	1.2
Pathology	3.0	0.0 *	--
Radiology	6.0	0.0 *	--
Total Hospital-Based	**12.0**	**4.2**	--
Other			
Emergency Medicine	12.0	13.9	1.9
Psychiatry	10.0	13.4	3.4
Neurology	1.4	1.2	-0.2
Total Other	**23.4**	**28.5**	**5.1**
Overall Total	**116.5**	**117.5**	

* The ASAM II model does not recognize providers in these specialties, only support staff.